

# VU Research Portal

## Design and current content of the REVAMP Web site

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# **Design and current content of the REVAMP Web site**

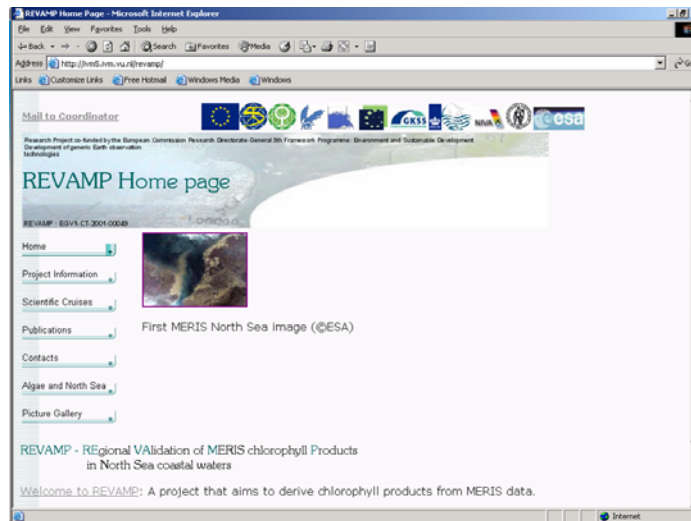
M.A. Eleveld and S.W.M. Peters

E-03/05

February 19, 2003

Reviewer: Drs. R. Pasterkamp, IVM

URL <http://ivm5.ivm.vu.nl/revamp>



REVAMP –

REGional Validation of MERIS chlorophyll Products in North Sea coastal waters

Contract Number: EGV1-CT-2001-00049

Deliverable: D5.4, Web site

Deliverable nr: 33

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## Abstract

REVAMP is a project aiming at REgional VALidation of MERIS chlorophyll Products in North Sea coastal waters. REVAMP is co-funded by the European Commission within the Fifth Framework Programme "Energy, Environment and Sustainable Development". REVAMP was launched in February 2002 by a consortium of 8 partners from different European countries, and will be completed in January 2005.

In REVAMP the Internet is actively used for data dissemination using a password protected ftp site for partners (**[ftp://revamp:\\_deliverable@ivm5.ivm.vu.nl](ftp://revamp:_deliverable@ivm5.ivm.vu.nl)**) and a publicly accessible Web site (**<http://ivm5.ivm.vu.nl/revamp>**) for dissemination of results. The project has been presented on the Internet from the first project month onwards. Intermediate results were be put on an ftp site with restricted access. A publicly accessible Web site was developed at the same time.

The Web site has a general informative character. The content of the Web pages is approved and revised in PCC meetings. The Web site gives information about the consortium, planned activities, scientific results and expected achievements; documents that are public can be downloaded in PDF format. Deliverable D5.4, the project Web site is continuously updated but especially at key months +1, +3, +16, +25 and +31 (REVAMP, 2002).

The current Web site is easily maintained through use of the option Publish Web in Microsoft FrontPage2000. This option enables overwriting older versions. Before this is done a backup is made on the server. The Web site currently runs on our internal ivm5 server, but has already proven to be quite stable so that future Web hosting on an external server could also be pursued. (Visitors to the internal server would then be automatically redirected to the new site.)

This report gives a description of the current Web site by showing its location, a print of the home page, the site map, and the content, consisting of, e.g., a list of deliverables accessible to the public, and some insight onto the established links to other sites.

Subsequently information about its dissemination and current use is provided, to end with an outlook towards future developments on the Web site.



## 1. Introduction

REVAMP is a project aiming at REgional VALidation of MERIS chlorophyll Products in North Sea coastal waters. REVAMP is co-funded by the European Commission within the Fifth Framework Programme "Energy, Environment and Sustainable Development". REVAMP was launched in February 2002 by a consortium of 8 partners from different European countries, and will be completed in January 2005.

In REVAMP the Internet is actively used for data dissemination using a password protected ftp site for partners (**<ftp://revamp:deliverable@ivm5.ivm.vu.nl>**) and a publicly accessible Web site (**<http://ivm5.ivm.vu.nl/revamp>**) for dissemination of results. The project has been presented on the Internet from the first month onwards. Intermediate results were be put on an ftp site with restricted access. A publicly accessible Web site was developed at the same time.

Although this report mainly deals with the Web site, something will also be said here on the ftp site. Using secure Internet connections, each partner has had information uploaded on every Work package under their responsibility. Every partner has been able to read and download information from all work packages. The Quality Assurance Committee (QAC) has access to all information to guarantee fast quality assurance. The ftp site holds an accurate and updated version of all Deliverables and contains additional information, such as, minutes from progress meetings and email addresses of all partners.

The Web site has a general informative character. It supplies background information about the set-up of the project and also shows the progress. The content of the Web pages is approved and revised in PCC meetings. The Web site gives information about the consortium, planned activities, scientific results and expected achievements; documents that are public can be downloaded in PDF format. Deliverable D5.4, the project Web site, is continuously updated but especially at key months +1, +3, +16, +25 and +31 (REVAMP, 2002).

### 1.1 Constructing the REVAMP Web site

During the first months of the project a structure for the Web site was developed with Macromedia Dreamweaver 4. The URL of the REVAMP Web site was **<http://ivm5.ivm.vu.nl/revamp/revampindex.html>**. The implemented content came for the greater part from the proposal (REVAMP, 2002).

Subsequently, this Web site was evaluated. The set-up of this site was generally appreciated, but a problem with the Web site was that the homepage contained a Macromedia Flash animation, which requires downloading and installation of a plug-in.

At the same time additional input for contents was collected, and a Web based questionnaire to support REVAMP's user requirements study (Van der Woerd et al., 2002; Appendix 1) was created with Microsoft FrontPage2000.

These activities resulted in a proposal for revamping the REVAMP Web site.



## 1.2 Revamping the Web-site

The proposal for the revamped Web site was discussed at the Plymouth meeting (Eleveld et al., 2002), and was generally accepted by the project partners. Table 1.1 and 1.2 give a 'site map' of the original REVAMP Web site and of its successor.

*Table 1.1 Original structure of the REVAMP Web site.*

Project Info	Abstract	Objectives	Approach	Work packages			
Documents	Public deliverables						
Contacts	Partners	EC	Other projects	Q.A.C	Pot end users	Diverse	ESA
Cruises							
News							
Links							
Home	Site under construction						

*Table 1.2 Proposed structure for the revamped REVAMP Web site.*

Project Information	Introduction	Abstract	Objectives	Approach	Work Packages
Scientific Cruises	Table + ships + links				
Publications	Public deliverables pdf	Abstracts Conference Papers	Abstracts Peer-Reviewed Articles		
News and Events	Revamp Presentations Future / Past	MERIS news			
Project Partners and User Contacts	Partners Table: logo, full name {link} country, contact	EC Link Cordis eesd	Related Projects	End Users	ESA
Algae and North Sea	Links Algae	Links North Sea			
Picture Gallery	First MERIS images				
Home	Welcome	Goodies?			

During the Plymouth meeting the functioning of the ftp site was also praised.

After the Plymouth meeting, the revamped Web site was constructed according to plan (Table 1.2) in Microsoft FrontPage2000. Its new address is

**<http://ivm5.ivm.vu.nl/revamp>**. FrontPage2000 was chosen because it is an easy and stable program. Moreover, It appeared it worked well in Explorer and Netscape.

### **1.3 Maintaining the current Web site**

The current Web site is easily maintained through use of the option Publish Web in Microsoft FrontPage2000. This option enables overwriting older versions. Before this is done a backup is made on the server. The Web site currently runs on our internal ivm5 server, but has already proven to be quite stable so that future Web hosting on an external server could also be pursued. (Visitors to the internal server would then be automatically redirected to the new site.)



## 2. Description of the Web site

### 2.1 Location and preview of the current home page

URL <http://ivm5.ivm.vu.nl/revamp/>

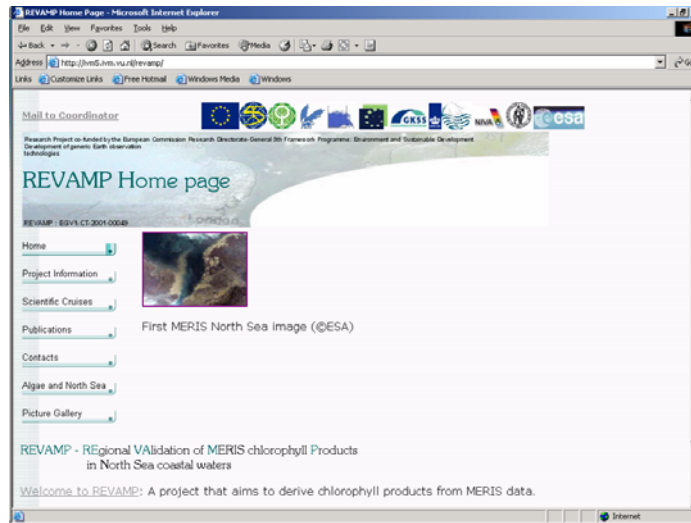


Figure 2.1 The REVAMP homepage.

### 2.2 Site map

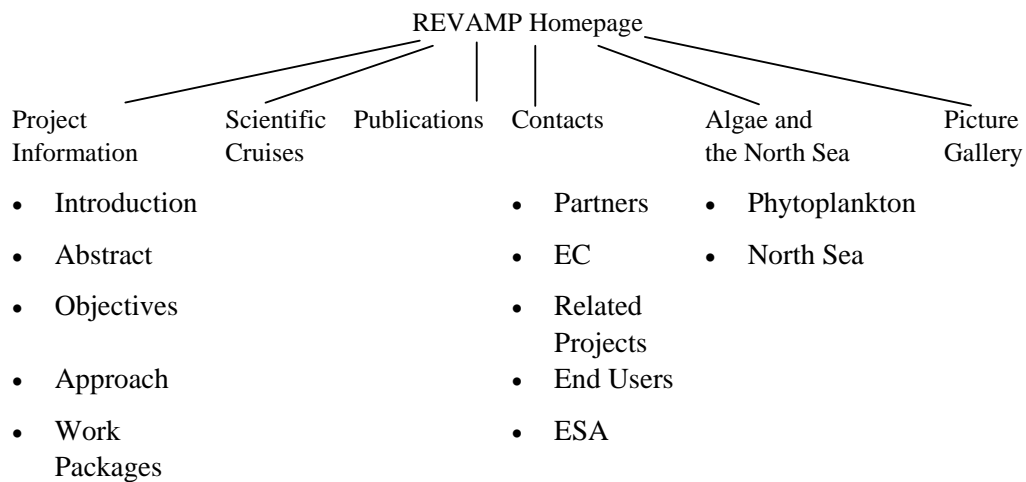


Figure 2.2 Current REVAMP site map.

## 2.3 Summary

According to the Site Summary, the REVAMP Web site currently consists of the following number of:

Files in the current web	91
Pictures	60
Hyperlinks	220
	(external hyperlinks 77)

## 2.4 Content

The following sections will provide an overview of the content of the current Web site. The content was mainly copied from FrontPage and pasted in Word as unformatted text. On the Web site the text contains formatting, fonts and hyperlinks to text, pictures, and Web sites. All main pages contain a top frame featuring news and interesting information. Advice from the Web style guide (Lynch & Horton, 2002) was followed when filling the Web site with content. For a better impression, we therefore invite you to have a look at either the Web site or at the CD, which comprise the full html version.

### 2.4.1 Home Page



First MERIS North Sea image (©ESA)

REVAMP - REgional VALidation of MERIS chlorophyll Products in North Sea coastal waters

Welcome to REVAMP: A project that aims to derive chlorophyll products from MERIS data.

### 2.4.2 Project Information

News: The REVAMP leaflet available as pdf:  
 Leaflet Outside (4 Mb) Leaflet Inside(3 Mb)

#### Introduction

REVAMP is a project aiming at Regional Validation of MERIS Chlorophyll products in North Sea Coastal Waters. REVAMP is co-funded by the European Commission within the Fifth Framework Programme "Energy, Environment and Sustainable Development". REVAMP was launched in February 2002 by a consortium of 8 partners from different European countries, and will be completed in January 2005.

This web site informs you about the background of the project: abstract, objectives, approach, and work packages. It gives an overview of the scientific cruises that are planned for obtaining the MERIS validation measurements.

You will also be informed about preliminary results. Some publications will be on-line available, and we will also inform you where and when you can learn about the project from REVAMP partners.

Visually attractive background information on REVAMP-related topics, such as MERIS, algae and the North Sea, is provided by links, and in our picture gallery.

For suggestions or questions you can get in touch with us through the project manager.

## Abstract

### *Problems to be solved*

Knowledge of phytoplankton dynamics and distributions in North Sea coastal waters is vital to ensure a scientific basis for coherent management of the coastal environment and the human activities which impact on or benefit from it. The common environmental policies, of the EU and OSPAR are underpinned by the role of phytoplankton biomass and its impact on sustainable development. Currently, the main problem is that monitoring of phytoplankton is carried out by all North Sea states by means of conventional, timely and costly water sampling programs. This results in sparse spatial and temporal coverage. Such sparse sampling cannot identify the causes of specific events or ensure a representative coverage of the strong variability in complex heterogeneous and dynamic coastal waters.

### *Scientific objectives and approach*

REVAMP will develop an improved product from MERIS, namely an atlas containing maps of validated chlorophyll (CHL) concentrations for the North Sea. There exists little experience in the operational application of satellite data for monitoring the quality of coastal waters. Additionally, coastal processes induce natural variations in optical properties and concentrations on a regional scale. Therefore REVAMP will follow a regional approach where parts of the North Sea will be described by same algorithm with different parameters. CHL algorithms are still far from well established for turbid coastal waters, where bulk optical properties depend not only on phytoplankton and its degradation products (case 1 waters) but also on other optically active constituents such as non-phytoplanktonic particulate matter and colored dissolved organic matter (case 2). For case 2 waters the conventional blue-green band ratio algorithms fail. Therefore the MERIS standard neural network approach will be considered together with alternative innovative methods such as multi-spectral matrix inversion methods. Parameterization of these algorithms and validation of the end products will require high quality in-situ data on concentrations and optical properties. REVAMP will gather this data in a number of relevant regions in the North Sea. In concert with the end-user REVAMP will define and produce relevant information products (Value Added Products) based on the CHL-maps.

### *Expected impacts*

REVAMP conforms to several EU policies and directives mainly regarding the need for monitoring coastal waters in order to protect various activities (fishing, tourism, bathing and aquaculture) and the common policy on eutrophication. It will provide an important

tool for the preservation and maintenance of the marine environment exploitation at a sustainable level by means of continuous data collection and analysis.

The use of trans-national satellite data sources and a unified methodological provides an objective measure of CHL, which will contribute to standardization of criteria for determining the eutrophication status of European coastal waters.

## Objectives

### *Introduction*

Knowledge of phytoplankton dynamics and distributions in North Sea coastal waters is vital to ensure a scientific basis for coherent management of the coastal environment and the human activities which impact on or benefit from it. On the one hand phytoplankton abundance and species composition are influenced by anthropogenic nutrient supply from agricultural and industrial sources. On the other hand, human activities such as fisheries and mariculture may be affected by phytoplankton, which constitute the base of the marine food chain. Furthermore, phytoplankton plays a major role in the marine foodweb through the flow and cycling of carbon and other materials to higher trophic levels that helps to maintain high marine biodiversity.

The common environmental policies, of both the European Union and the Oslo-Paris Convention (OSPAR) are underpinned by the role of phytoplankton biomass and its impact on sustainable development. Monitoring of phytoplankton, which is currently carried out by all North Sea states, is conventionally based on timely and costly water sampling programs. This results in sparse spatial and temporal coverage and gives only a vague impression of the dynamics of phytoplankton in relation to human activities. Satellite remote sensing of chlorophyll concentrations therefore offers a significant and powerful tool supplementing conventional sampling surveys by providing synoptic observations of the entire coastal zone. Remote sensing algorithms for the accurate retrieval of chlorophyll in turbid coastal waters are still under development. The spatial, spectral and radiometric resolution of existing satellite sensors (e.g. SeaWiFS) is insufficient for chlorophyll detection in coastal waters where there is strong absorption and backscatter by non-phytoplanktonic matter. The new generation satellite sensor MERIS aboard ENVISAT launched by the European Space Agency, which is specifically designed for high resolution optical detection in turbid Case II waters incorporating programmable band widths and positions, could potentially revolutionize the monitoring of algal biomass in coastal zones. Before this can be achieved MERIS algorithms require rigorous development, testing and validation.

### *Primary objectives*

The primary objectives (from a user/operationalisation point of view) are:

1. To support the monitoring of the eutrophication status of the North Sea and the effects of nutrient reduction by measuring and validating a key bio-geo-physical parameter (Chlorophyll concentration) using ENVISAT/MERIS satellite observations;
2. To establish, strengthen and build on the European potential in Earth observation (EO) technologies that will be used to monitor, understand and protect the environment of the North Sea and related coastal waters. This will be achieved

through co-operation between remote sensing institutes on all borders of the North Sea, private companies and end users.

The primary objectives (from a research point of view) of the REVAMP project are:

1. To develop an improved validated product from the secured European mission ENVISAT, namely validated regional chlorophyll concentrations for case-II waters (North Sea);
2. To extend scientific understanding of the nature of the MERIS observed signals beyond empirical relationships by applying state-of-the art analytical inversions of bio-optical models (Neural networks, Matrix inversion techniques);
3. To parameterise bio-optical models to a high quality, innovative in-situ and laboratory techniques are required. This will include only the measurements of regional variations in both absorption and backscattering due to phytoplankton and other water components. Backscattering remains poorly understood;
4. To develop reliable information sources for North Sea policy building, in the form of yearly atlases (from spring 2002 - spring 2003) which will contain validated CHL concentration maps for the North Sea and indices to underlying processes such as a eutrophication index and other value added products such as annual peak concentration etc.;
5. To extend MERIS validation beyond the ESA validation phase and to study and recommend further strategies for low cost, continuous and long term validation.

#### *Secondary objectives*

To fulfil these primary objectives, REVAMP will address the following secondary objectives in corresponding work packages:

1. To collect and analyse historical North Sea data on concentrations and optical properties of optical active constituents of the North Sea. To integrate selected, complete and validated data into one database, which will be distributed within the consortium. To complement this database with historical satellite observations and products ( e.g. SeaWiFS) in order to determine regions in the North Sea with recurrent phytoplankton blooms and homogeneous phytoplankton signatures;
2. To use the historical database, together with data collected in 2002/2003, to select parameterise, calibrate and validate bio-optical models and inversion algorithms that are suitable for regional CHL concentration retrieval from MERIS observations. The final algorithm and regional parameter sets will be documented into the Regional Algorithm Theoretical Base Document (RATBD);
3. To collect a limited, complementary (spring 2002 to spring 2003) field data-set of high quality observations to further calibrate bio-optical models and inversion algorithms (2002 data), but especially to validate regional CHL products derived from MERIS observations (2002 and spring 2003 data). Field surveys will be dedicated to the collection of high quality standard observations of inherent and apparent optical properties and concentrations of key optical variables. The project will also use innovative techniques for the measurement of water leaving radiance and scattering. As a secondary goal, additional data will be collected to validate MERIS atmospheric correction and the standard water leaving radiance product, in order to understand errors in the final regional CHL-products due to incomplete or erroneous atmospheric correction. Although REVAMP is not dedicated to adjusting MERIS atmospheric cor-



rection, two of the partners have expertise in this field and will co-operate closely with ESA to advise on improvements;

4. To build a MERIS Regional CHL-Products Processor (MEP) based on existing building blocks; the initial work will consist of compiling the user requirements, and specifically the translation of the RATBD into processing and product requirements. Following the development and implementation phase, the processor software will be validated using MERIS measurements and in-situ data. Preceding the actual processing, requirements for image suitability and indicators (flags) for CHL-product quality will be developed and incorporated into MEP. The products will not only include CHL but also a data quality assessment;
5. To develop relevant Value Added Products. To produce a prototype CHL atlas (including prototype Value Added Products) and to liaise with intermediate user consultants to fine-tune the products to user requirements;
6. To make the final 2002/2003 ATLAS of CHL and Value Added Products maps, to print and disseminate the atlas and to conduct a final workshop to demonstrate the product and to define future versions in collaboration with the end user.

#### *Tertiary objectives*

REVAMP has the following tertiary objectives:

1. To organise a series of workshops with partners and interested end users to discuss project progress and to integrate various approaches to CHL-monitoring;
2. To participate in regular ESA-consultations to report on MERIS validation;
3. To produce a number of high standard scientific publications in relevant journals and presentations at European and International Conferences, including contributions to conference proceedings;
4. To actively use the Internet for data dissemination using a password protected website for partners and a publicly accessible website for the dissemination of results.

### **Approach**

#### *Basics*

The basic technological approach that is adopted is summarised in the following flowchart.

The starting point for MERIS validation, algorithm development and product validation is the collection of high quality, complete and validated historic and actual data.

These data will be used to parameterise a bio-optical model, which will subsequently be used to model water leaving radiance or a derived parameter such as subsurface irradiance reflectance.

Modelled water leaving radiance will be compared to in-situ measured water leaving radiance to calibrate and validate the bio-optical model.

If model prediction of water leaving radiance is successful, the bio-optical model will be inverted into an algorithm using state of the art analytical techniques such as Neural networks inversion and/or Matrix inversion techniques.

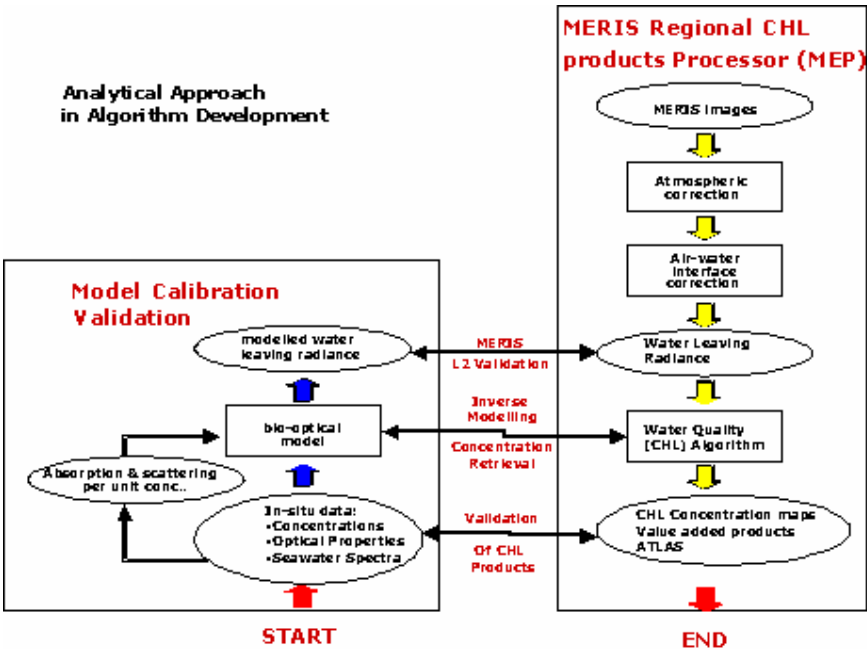


Figure 2.3 Analytical approach in algorithm development.

The algorithm will be inserted into the MERIS processor chain to produce regional maps of CHL concentration. These maps will be validated using selected in situ observations.

An important step in the calibration of the bio-optical model is the understanding, measurement and parameterisation of optical properties such as phytoplankton and suspended matter absorption and backscattering, and absorption by coloured dissolved organic matter.

Work Packages

Six interconnected work packages

Revamp will consist of 6 work packages, namely:

WP0	Project Management
WP1	Collection of Historical CSI-data and meta-data, region identification and optical model parameter validation
WP2	Algorithm selection, calibration and validation
WP3	Data collection and instrument calibration
WP4	Production of regional MERIS based CHL maps
WP5	Value Adding Products and User Requirements
WP6	Final products and results dissemination

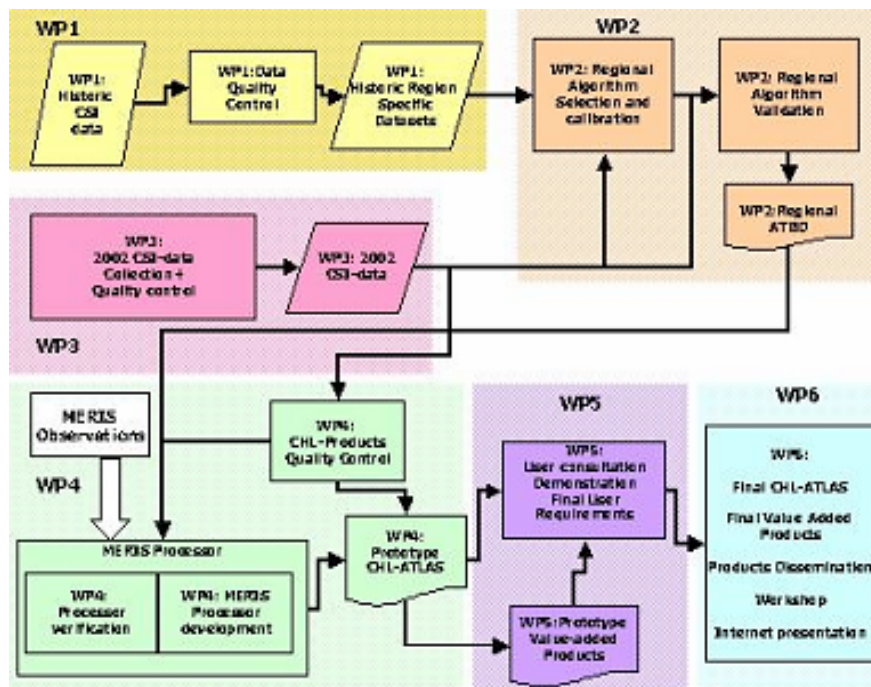


Figure 2.4 Overview of workpackages.

WP1 will produce historic CSI-datasets and WP3 will collect and deliver actual high quality CSI-datasets. Both datasets will be used to parameterize, calibrate and validate regional TCHL algorithms in WP2. WP4 -the MERIS processor- will produce an instrument to derive CHL-products from MERIS observations. The products will be validated using the datasets from WP1 and 3. Validated CHL products will subsequently be used to derive prototype value added products in WP5. These products, together with the CHL-products will be demonstrated to the end-user in WP5 in order to discuss requirements for the final products suite. In WP6 the final products are produced and demonstrated to a broad community of end-users.

### 2.4.3 Scientific Cruises

Tip: Up-to-date MERIS news can be obtained from [SCIAMACHY validation support office](#) which provides amongst others information about the functioning of the instruments on board ENVISAT.

Fieldwork period	North Sea region	Institute(s)	Personnel	Vessel	Measurements	Match-up
08-04-'02	Noordwijk transect		Hopman-Ubbels et al.	RV Mitra (RWS-DNZ)	IOPs, Rho_w, Conc. (CHL, TSM, CDOM)	No
03-06-'02	Noordwijk transect		Pasterkamp et al.	RV Mitra (RWS-DNZ)	IOPs, Rho_w, Conc. (CHL, TSM, CDOM)	No
02-09-'02	Noordwijk transect		Hopman-Ubbels et al.	RV Mitra (RWS-DNZ)	IOPs, Rho_w, Conc. (CHL, TSM, CDOM)	Yes

An overview of historical and currently collected CSI data is available at the [REVAMP database](#).

#### 2.4.4 Publications

News: Next occasion on which Revamp will be presented: EARSeL Workshop of SIG on Remote Sensing of the Coastal Zone, 6-7 June 2003, Ghent, Belgium

#### REVAMP Presentations

##### *Future Events*

- EARSeL Workshop of SIG on Remote Sensing of the Coastal Zone, 6-7 June 2003, Ghent, Belgium
- Habwatch workshop, 11-21 June 2003, Villefranche-sur-Mer, France

##### *Past Events*

- Ocean Optics XVI, 18-22 Nov. 2002, Santa Fe, New Mexico, USA
- Monitoring Tailor Made, 3-5 June 2002, Dalfsen, the Netherlands

#### REVAMP Publications

##### *Papers*

Peters, S.W.M, Pasterkamp, R.& van der Woerd, H.J., 2002. A Sensitivity Analysis of Analytical Inversion Methods to Derive CHL from MERIS Spectra in Case-II Waters. Proceedings Ocean Optics XVI, 18-22 Nov. 2002, Santa Fe, New Mexico, USA.

Oo.pdf (0.5 Mb)

##### *Public deliverables*

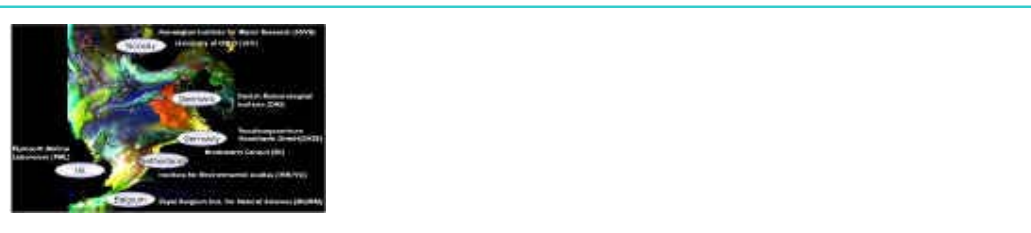
User requirements for REVAMP chlorophyll products: Initial requirements inventory.

Urd.pdf (1.4 Mb)

*Leaflet*

First REVAMP leaflet: Outside pdf (4 Mb), Inside pdf (3 Mb)

## 2.4.5 Contacts



## EC

*Eutrophication*

EEA report on Eutrophication in Europe's coastal waters. For more information visit the European Environment Agency and the Inland and Marine Water Unit of DG Joint Research Centre. Information on water quality policy in the European Union. For more information visit DG Environment.

*Research*

Press release ENVISAT: EU Supports New Space Applications for Global Monitoring of Environment & Security, Brussels, 1 March 2002

REVAMP is co-funded by the European Commission within "Energy, Environment and Sustainable Development", one of the four thematic programmes of the Fifth (EC) RTD Framework Programme. For more information: visit the Community Research & Development Information Service.

## Partners

*Table 2.1 REVAMP partners.*

Institute/Company	Name
Institute for Environmental studies (IVM/VU)	Steef Peters (Coordinator)
Tel: +31 20 4449555	Hans van der Woerd
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Royal Belgium Institute for Natural Sciences (MUMM)	Kevin Ruddick
Tel: +32 2 7732131	Karien De Cauwer
Fax: +32 2 7706972	Vera De Cauwer
	Mia Devolder
	Siegried Jans
	Youngje Park
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Fax: +44 1752 633101	Gerald Moore
	Victor Martinez Vicente
Norwegian Institute for Water Research (NIVA)	Kai Sørensen
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Fax: +47 2218 5200	Gunnar Severinsen
	Merete Grung
University of Oslo (UIO)	Eyvind Aas
Tel: +47 2285 5808	
Fax: +47 2285 5269	

## Other Projects

Links to related EC, and other projects:

Siscal - Satellite Information System for Coast Areas and Lakes

NAOC - Neural Algorithms for Ocean Color

## End Users

REVAMP aims to satisfy a variety of users that are interested in data and information on various aggregation levels. User requirements were initially extracted from literature and summarised in the following document:

User requirements for REVAMP chlorophyll products: Initial requirements inventory. Urd (1.4 Mb)

Further information on interested users will be collected through, amongst others, a questionnaire. A preliminary version of this Questionnaire has been put here to enable you to express your interest. You can also contact the co-ordinator by email.

*Comment:* This Web-based questionnaire is attached in Appendix 1

## ESA

### *MERIS and Envisat information*

MERIS products handbook (Chapter 5 comprises a MERIS glossary)

<http://envisat.esa.int/dataproducts/meris/CNTR.htm>

MERIS coverage indicator

<http://envisat.esa.int/services/descw>

MERIS Toolbox - BEAM, VISAT

<http://envisat.esa.int/services/beam/>

<http://scipc3.scicon.gkss.de/services/matbx/documentation/index.html>

Enviview, an application for opening any Envisat data file, examining its contents, and exporting the data to HDF for use in other software packages

<http://envisat.esa.int/services/enviview/>

### *News and contact information*

Envisat news

<http://envisat.esa.int>

Envisat User Services, the site where you will be able to order MERIS data in future

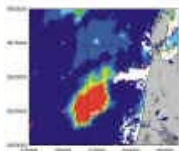
<http://envisat.esa.int/services/>

Conferences, symposia and workshops organised by ESA

<http://www.estec.esa.nl/conferences/>

To contact someone at ESA via e-mail: ESA Web Helpdesk

## 2.4.6 Algae and the North Sea



Algal bloom in front of the Dutch coast derived from SeaWiFS imagery of August 2001 (© IVM, MD-RWS).

## Introduction

REVAMP aims to make a regional validation of MERIS chlorophyll products in North Sea coastal waters. To allow you to put REVAMP into a frame we provide some

educational links to information on MERIS, chlorophyll (phytoplankton, algae) and the North Sea.

## Algae

Links Phytoplankton, algae

From MERIS satellite data we can derive information on chlorophyll-a. Chlorophyll-a is a chemical substance that is present in phytoplankton ("floating plants"). Observation of high concentrations of chlorophyll-a in coastal waters mainly co-insides with high concentrations of algae. Algae are organisms that mainly belong to this floating plants group. The following websites show photographs of various algae species and provide information on the remote sensing of phytoplankton.

## Plankton

For an interesting view in a tide pool, and tips for construction a plankton net:

<http://www.umassd.edu/Public/People/Kamaral/thesis/plankton.html>

Phytoplankton, algae

A checklist of phytoplankton (diatoms, dinoflagellates and other) in the Skagerrak-Kattegat (including heterotrophic flagellates):

<http://www.marbot.gu.se/SSS/SSShome.htm>

## Algal blooms, Red tide, Harmful Algal Blooms

Occasionally, algae grow very fast or "bloom" and accumulate into dense, visible patches near the surface of the water. "Red tide" refers to blooms of certain phytoplankton species that contain reddish pigments; they are usually not harmful. Harmful algal blooms (HAB's) contain toxins or that cause negative impacts. Information on red tides and harmful algae blooms can be found on the following sites:

<http://www.whoi.edu/redtide/>

<http://www.ioc.unesco.org/hab/>

## Dinoflagellates, Shellfish poisoning

Dinoflagellates are single-celled organisms that have two distinctive flagella (mini-ribbons) during at least part of their life cycle and/or a special type of nucleus called a dinokaryon.

They are probably best known as a principal cause of "red tides" and they can also cause paralytic shellfish poisoning.

<http://www.doh.wa.gov/ehp/sf/BiotoxinProgram.htm>

<http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/biotoxins.htm>

## Seaweeds and algae

The term seaweed refers to a certain group of large marine algae that grow almost exclusively in shallow waters. The following sites contain a lot of pictures of seaweeds:

<http://www.sonoma.edu/biology/algae/algae.html>



## Phytoplankton (algae) and remote sensing

The Remote Sensing Group of the Plymouth Marine Laboratory gives a very comprehensive web-presentation on the possibilities of phytoplankton mapping using remote sensing:

[http://www.npm.ac.uk/rsdas/projects/set\\_demo/index.htm](http://www.npm.ac.uk/rsdas/projects/set_demo/index.htm)

A website featuring, amongst others, SeaWiFS images of algal blooms is:

<http://www.soc.soton.ac.uk/SUDO/tt/eh/>

Read what the NASA/SeaWiFS pages have to say about phytoplankton at:

<http://earthobservatory.nasa.gov/Library/Phytoplankton/>

## North Sea

MERIS satellite data will cover areas all over the World. For us, the North Sea comprises an important and interesting European coastal study area. The following websites present some of the interesting aspects of North Sea coastal waters and of on-line maps and atlases of the North Sea in particular.

### *North Sea coastal waters links*

North Sea, Skagerrak, Kattegat, and Baltic Sea

Oceanographic data for North Sea, Skagerrak, Kattegat, and Baltic Sea:

Baltic operational oceanographic system

### *Frisian Front*

This site presents a survey of the hydrography, plankton communities, sediment characteristics and bottom fauna in the southern North Sea, from the Frisian Front towards the Norfolk Banks:

<http://www.nioz.nl/en/facilities/dmg/MitraFFP/>

### *Wadden Sea*

Within InterWad, the fascinating world of the Wadden Sea is revealed through facts on, for example, flora, fauna, fishery, and tourism. The site enables you to use state-of-the-art tools, such as seal watching by webcam, and using the interactive Wadden web atlas (Watlas):

<http://www.waddensea.org/> or <http://www.waddenzee.nl> (in Dutch)

For the Marsdiep area, this site presents continuous observations of oceanographical data from TESO ferry 'Schulpengat' on the traject Den Helder - Texel:

<http://www.nioz.nl/en/deps/fys/niozteso/enht>

### *Dutch North Sea / De Nederlandse Noordzee*

Naast meetgegevens over o.a., waterstand & astronomisch getij, golven, wind, zicht, luchtdruk & temperatuur, en watertemperatuur vindt je hier eigenlijk allerlei soorten informatie op het gebied van water in Nederland:

<http://www.waterbase.nl/> (mainly in Dutch )

<http://www.actuelewaterdata.nl/>

*Belgian North Sea coast*

For the present weather, oceanographic situation, and bacteriological quality of Belgian coastal waters, have a look at:

<http://www.vliz.be/En/coast/coast.htm>

<http://www.mumm.ac.be/EN/NorthSea/index.php>

*Satellite imagery of the North Sea*

Weather and satellite imagery Meteosat infrared imagery (Text in Dutch):

<http://www.knmi.nl/voorl/weer/>

NOAA/AVHRR image products of the North Sea for Sea Surface Temperature (SST) and Sea Surface Reflectance/Turbidity maps:

[http://www.knmi.nl/onderzk/applied/sd/en/AVHRR\\_archive\\_KNMI.html](http://www.knmi.nl/onderzk/applied/sd/en/AVHRR_archive_KNMI.html)

*On-line Atlases of the North Sea*

An online geoscience, engineering and economic review of oil and gas fields in production and under development in the North Sea:

<http://www.nitg.tno.nl/webatlas/>

*Dutch Atlases / Nederlandse atlassen*

Noordzee-atlas voor zwevend stof op basis van satellietbeelden in 2000

<http://212.52.2.130/watermarkt/digiproductions/noordzee-atlas%202000.pdf> (in Dutch)

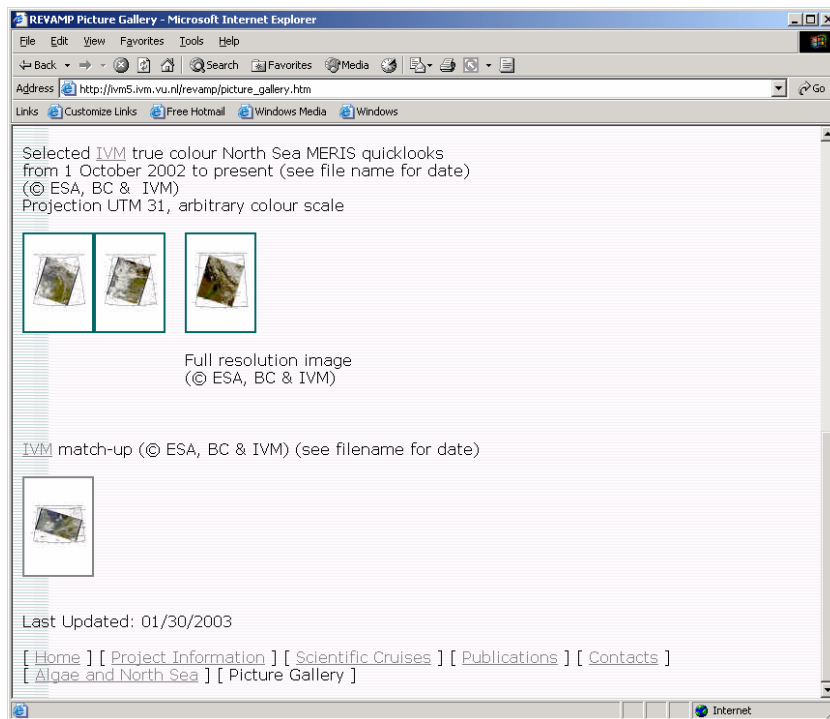
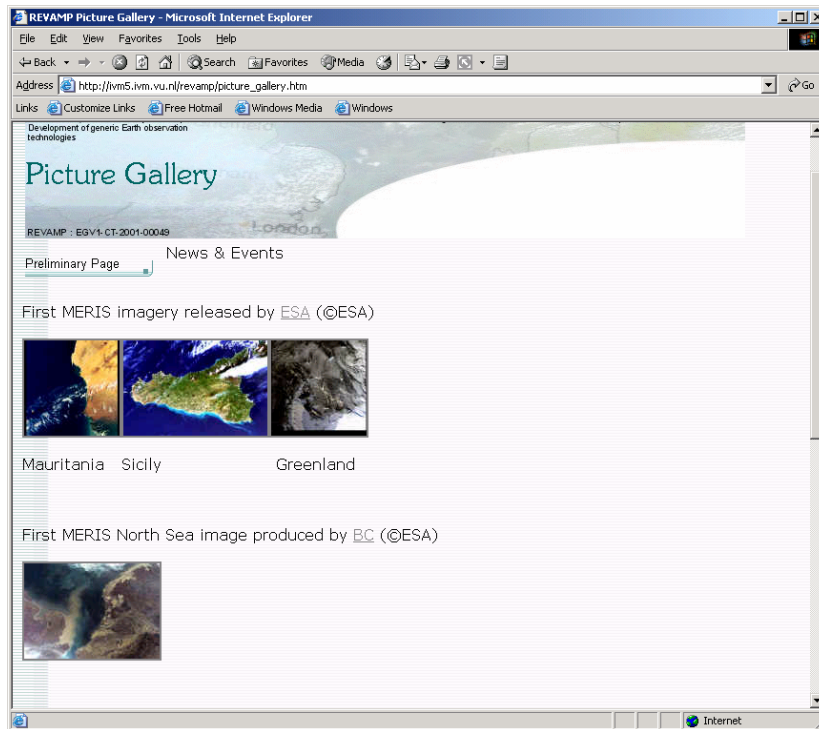
Probeer zelf eens te GISsen via het Internet! (GIS=Geografisch Informatie Systeem).

De Interactieve Noordzee-Atlas stelt gebruikers in staat om met verschillende thematische kaarten ruimtelijke analyses uit te voeren. Bovendien toont een reeks geïnterpreteerde SeaWiFS satellietbeelden enkele processen in de Noordzee die vanuit de ruimte te volgen zijn. Kijk eens naar de Flash animatie van het zwevende stof gehalte in de Noordzee om een idee te krijgen van de dynamiek van deze processen.

[http://www.feweb.vu.nl/gis/SPINlab/mapservice/Noordzee\\_atlas/noordzeeatlas.asp](http://www.feweb.vu.nl/gis/SPINlab/mapservice/Noordzee_atlas/noordzeeatlas.asp)

(in Dutch). De Internet atlas van Nederland bevat o.a. links naar een overzicht van alle vuurtorens in Nederland, een interactieve kaart met gegevens van olie- en gasvelden en productie-platforms, informatie over de vergunningen voor het winnen van zand en grind uit de Noordzee, en zwemwaterkaarten: <http://www.atlasvannederland.nl/> (in Dutch)

## 2.4.7 Picture Gallery



## 2.5 Links

	Hyperlink	In Page	Page Title
Page	aglabck.gif	reva1011.css	
Folders	aglabckh.gif	reva1011.css	
Reports	aglabul1.gif	reva1011.css	
Navigation	aglabul2.gif	reva1011.css	
Hyperlinks	aglabul3.gif	reva1011.css	
Tasks	aglahbtn.gif	reva1011.css	
	aglahhov.gif	reva1011.css	
	aglahom.gif	reva1011.css	
	aglahomh.gif	reva1011.css	
	aglahsel.gif	reva1011.css	
	aglanxt.gif	reva1011.css	
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	aglanxt.gif	reva1011.css	
	aglaup.gif	reva1011.css	
	aglaup.gif	reva1011.css	
	aglauph.gif	reva1011.css	
	aglavbtn.gif	reva1011.css	
	aglavhov.gif	reva1011.css	
	aglavsel.gif	reva1011.css	
	banner6.gif	reva1011.css	
	glabkgnd.jpg	reva1011.css	
	glablobl.gif	reva1011.css	
	hor-rule.jpg	reva1011.css	
	http://130.37.129.100/english/o_o/instituten/IWM/research/rs/QuestRvM.htm	C-end_users.htm	C End Users
	http://212.52.2.130/watermark/digiproducs/noordzee-atlas 2000.pdf	AN-north_sea.htm	North Sea
	http://earthobservatory.nasa.gov/library/Phytoplankton/	AN_phytoplankton.htm	Phytoplankton
Page	Hyperlink	In Page	Page Title
Folders	http://envisat.esa.int/	C-esa.htm	C ESA
Reports	http://envisat.esa.int/dataproducts/meris/CNTR.htm	C-esa.htm	C ESA
Navigation	http://envisat.esa.int/services/	C-esa.htm	C ESA
Hyperlinks	http://envisat.esa.int/services/descw	C-esa.htm	C ESA
Tasks	http://envisat.esa.int/services/envienvi/	C-esa.htm	C ESA
	http://europa.eu.int/comm/	_borders/top.htm	Shared Top Border
	http://europa.eu.int/comm/environment/index_en.htm	C-EC.htm	C EC
	http://europa.eu.int/comm/environment/water/index.html	C-EC.htm	C EC
	http://europa.eu.int/comm/research/press/2002/pr0103en.html	C-EC.htm	C EC
	http://ies.jrc.cec.eu.int/Units/Imw/	C-EC.htm	C EC
	http://las.physik.uni-oldenburg.de/projekte/earsel/1st_workshop.html	publications.htm	REVAMP Publications
	http://las.physik.uni-oldenburg.de/projekte/earsel/1st_workshop.html	publications.htm	REVAMP Publications
	http://reports.eea.eu.int/topic_report_2001_7/en	C-EC.htm	C EC
	http://scip3.scicon.gkss.de/services/matbx/documentation/index.html	C-esa.htm	C ESA
	http://w3k.gkss.de/kof/	C-partners.htm	Partners
	http://w3k.gkss.de/kof/	_borders/top.htm	Shared Top Border
	http://www.actuelewaterdata.nl/	AN-north_sea.htm	North Sea
	http://www.aquasense.com	scientific_cruises.htm	REVAMP Scientific Cruises
	http://www.aquasense.com	scientific_cruises.htm	REVAMP Scientific Cruises
	http://www.aquasense.com	scientific_cruises.htm	REVAMP Scientific Cruises
	http://www.atlasvannederland.nl/	AN-north_sea.htm	North Sea
	http://www.boos.org/	AN-north_sea.htm	North Sea
	http://www.brockmann-consult.de/	C-partners.htm	Partners
	http://www.brockmann-consult.de/	picture_gallery.htm	REVAMP Picture Gallery
	http://www.brockmann-consult.de/	_borders/top.htm	Shared Top Border
	http://www.cordis.lu/eesd/	_borders/top.htm	Shared Top Border
	http://www.cordis.lu/eesd/home.html	C-EC.htm	C EC
	http://www.cordis.lu/en/home.html	C-EC.htm	C EC
	http://www.cordis.lu/fp5/	_borders/top.htm	Shared Top Border
	http://www.dmi.dk/eng/index.html	C-partners.htm	Partners
	http://www.dmi.dk/eng/index.html	_borders/top.htm	Shared Top Border

	Hyperlink	In Page	Page Title
	<a href="http://www.doh.wa.gov/ehp/sf/BiotoxinProgram.htm">http://www.doh.wa.gov/ehp/sf/BiotoxinProgram.htm</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.eea.eu.int/">http://www.eea.eu.int/</a>	C-EC.htm	C EC
	<a href="http://www.esa.int/export/esaCP/">http://www.esa.int/export/esaCP/</a>	picture_gallery.htm	REVAMP Picture Gallery
	<a href="http://www.esa.int/export/esaCP/">http://www.esa.int/export/esaCP/</a>	_borders/top.htm	Shared Top Border
	<a href="http://www.estec.esa.nl/conferences/">http://www.estec.esa.nl/conferences/</a>	C-esa.htm	C ESA
	<a href="http://www.feweb.vu.nl/gis/SPINlab/mapservice/Noordzee_atlas/noordzee...">http://www.feweb.vu.nl/gis/SPINlab/mapservice/Noordzee_atlas/noordzee...</a>	AN-north_sea.htm	North Sea
	<a href="http://www.habwatch.org/">http://www.habwatch.org/</a>	publications.htm	REVAMP Publications
	<a href="http://www.ioc.unesco.org/hab/">http://www.ioc.unesco.org/hab/</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.ipsl.jussieu.fr/NAOC/">http://www.ipsl.jussieu.fr/NAOC/</a>	C-related_projects.htm	C Related Projects
	<a href="http://www.knmi.nl/onderzoek/applied/sd/en/AVHRR_archive_KNMI.html">http://www.knmi.nl/onderzoek/applied/sd/en/AVHRR_archive_KNMI.html</a>	AN-north_sea.htm	North Sea
	<a href="http://www.knmi.nl/voort/weer/">http://www.knmi.nl/voort/weer/</a>	AN-north_sea.htm	North Sea
	<a href="http://www.marbot.gu.se/SSS/SSShome.htm">http://www.marbot.gu.se/SSS/SSShome.htm</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.marine.gov.uk/squilla.htm">http://www.marine.gov.uk/squilla.htm</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.minvenw.nl/rws/riza/home/index.html">http://www.minvenw.nl/rws/riza/home/index.html</a>	publications.htm	REVAMP Publications
	<a href="http://www.mumm.ac.be/datacentre/Databases/REVAMP/">http://www.mumm.ac.be/datacentre/Databases/REVAMP/</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.mumm.ac.be/datacentre/Databases/REVAMP/">http://www.mumm.ac.be/datacentre/Databases/REVAMP/</a>	PI-approach.htm	PI Approach
	<a href="http://www.mumm.ac.be/EN/Monitoring/Belgica/index.php">http://www.mumm.ac.be/EN/Monitoring/Belgica/index.php</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.mumm.ac.be/EN/Monitoring/RemoteSensing/index.php">http://www.mumm.ac.be/EN/Monitoring/RemoteSensing/index.php</a>	C-partners.htm	Partners
	<a href="http://www.mumm.ac.be/EN/Monitoring/RemoteSensing/index.php">http://www.mumm.ac.be/EN/Monitoring/RemoteSensing/index.php</a>	_borders/top.htm	Shared Top Border
	<a href="http://www.mumm.ac.be/EN/NorthSea/index.php">http://www.mumm.ac.be/EN/NorthSea/index.php</a>	AN-north_sea.htm	North Sea
	<a href="http://www.nioz.nl/deps/fys/niozteso/enhtml/master.html">http://www.nioz.nl/deps/fys/niozteso/enhtml/master.html</a>	AN-north_sea.htm	North Sea
	<a href="http://www.nioz.nl/en/facilities/dmg/MitraFFP/">http://www.nioz.nl/en/facilities/dmg/MitraFFP/</a>	AN-north_sea.htm	North Sea
	<a href="http://www.nitg.tno.nl/webatlas/">http://www.nitg.tno.nl/webatlas/</a>	AN-north_sea.htm	North Sea
	<a href="http://www.niva.no/engelsk/welcome.htm">http://www.niva.no/engelsk/welcome.htm</a>	C-partners.htm	Partners
	<a href="http://www.niva.no/engelsk/welcome.htm">http://www.niva.no/engelsk/welcome.htm</a>	_borders/top.htm	Shared Top Border
	<a href="http://www.noordzee.org/rws/dnz/vloot/mitra.htm">http://www.noordzee.org/rws/dnz/vloot/mitra.htm</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.npm.ac.uk/">http://www.npm.ac.uk/</a>	C-partners.htm	Partners
	<a href="http://www.npm.ac.uk/">http://www.npm.ac.uk/</a>	_borders/top.htm	Shared Top Border
	<a href="http://www.npm.ac.uk/rdsas/projects/set_demo/index.htm">http://www.npm.ac.uk/rdsas/projects/set_demo/index.htm</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.oceanopticsconference.org/core/index.asp">http://www.oceanopticsconference.org/core/index.asp</a>	publications.htm	REVAMP Publications
	<a href="http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/biotoxins.htm">http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/biotoxins.htm</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.sciamachy-validation.org/sv/">http://www.sciamachy-validation.org/sv/</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.siscal.net/">http://www.siscal.net/</a>	C-related_projects.htm	C Related Projects
	<a href="http://www.soes.soton.ac.uk/staff/tjt/">http://www.soes.soton.ac.uk/staff/tjt/</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.sonomas.edu/biology/algae/algae.html">http://www.sonomas.edu/biology/algae/algae.html</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.uio.no/english/">http://www.uio.no/english/</a>	C-partners.htm	Partners
	<a href="http://www.uio.no/english/">http://www.uio.no/english/</a>	_borders/top.htm	Shared Top Border
	<a href="http://www.umassd.edu/Public/People/Kamaral/thesis/plankton.html">http://www.umassd.edu/Public/People/Kamaral/thesis/plankton.html</a>	AN_phytoplankton.htm	Phytoplankton
	<a href="http://www.vliz.be/En/coast/coast.htm">http://www.vliz.be/En/coast/coast.htm</a>	AN-north_sea.htm	North Sea
	<a href="http://www.vu.nl/ivm">http://www.vu.nl/ivm</a>	scientific_cruises.htm	REVAMP Scientific Cruises
	<a href="http://www.vu.nl/ivm">http://www.vu.nl/ivm</a>	scientific_cruises.htm	REVAMP Scientific Cruises
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	<a href="http://www.vu.nl/ivm">http://www.vu.nl/ivm</a>	picture_gallery.htm	REVAMP Picture Gallery
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	<a href="http://www.waterbase.nl/">http://www.waterbase.nl/</a>	AN-north_sea.htm	North Sea
	<a href="http://www.whoi.edu/redtide/">http://www.whoi.edu/redtide/</a>	AN_phytoplankton.htm	Phytoplankton

### 3. Dissemination and current use of the Web site

#### 3.1 Search engines

The Web site was submitted to the Google ([www.google.com](http://www.google.com)) and AltaVista ([www.altavista.com](http://www.altavista.com)) directories, and it currently pops-up from these search engines.

#### 3.2 REVAMP partners and the QAC

The REVAMP partners had a look at the new REVAMP Web site. Some came with constructive comments and requests for adding supplementary content, such as a link to the REVAMP database (<http://www.mumm.ac.be/datacentre/Databases/REVAMP/>). Some partners helped with dissemination by adding the address in their e-mail signatures, and by adding our link to their Web sites, especially on places where REVAMP is already mentioned. In month 16 a second request for input from the partners will be made particularly concerning details on Scientific cruises (in similar format as on the Web site), REVAMP-related Publications (including public deliverables), interesting Links on Algae or the North Sea, and Quick-looks.

Members of the Quality Assurance Committee (QAC) were also pointed to the existence of the new Web site, and we received some positive reactions.

#### 3.3 External sites

Web masters from the following external sites add our link to their lists:

The Coastal Guide      <http://www.coastalguide.org/links/index.html>

EuroGOOS              <http://www.eurogoos.org>

Siscal                  <http://www.siscal.net>

(A request to NAOC    (<http://www.ipsl.jussieu.fr/NAOC/>) also has been made)

#### 3.4 Ftp site

REVAMP partners also use the ftp site ([ftp://revamp\\_deliverable@ivm5.ivm.vu.nl](ftp://revamp_deliverable@ivm5.ivm.vu.nl)) to download information, and data. This functions well. Examples of its use are that the ftp site contains final versions, and frequently also drafts of deliverables. In consultation with MUMM, a back-up copy of the original data-sets for the REVAMP Databank have been made available on REVAMP ftp site. A final example is the leaflet for which medium quality pdfs were available on the FTP site, before they were printed.



## 4. Outlook: Promoting further dissemination and use

### 4.1 Additional content

In project month 16 a second request for input from the partners will be made particularly concerning details on Scientific cruises (in similar format as on the Web site), REVAMP-related Publications (including public deliverables), interesting Links on Algae or the North Sea, and Quick-looks.

For 2004 it is foreseen that the value added products might be suitable for dissemination through the Internet, either as a click-able map or as a series of thematic maps. A Web site will be set up and maintained to display the valued added products. After the project, all Web pages will be transferred to either ESA or national Web sites to guarantee continuous access and maintenance for a prolonged period (REVAMP, 2002)

### 4.2 Additional technical features

The following additional technical features are foreseen:

The creation of favicons. This is a little icon (logo) that you see in your Bookmarks in Microsoft Explorer. It works only in Explorer 5 and above. If the visitors are running Netscape or an older version of Explorer, the browser will just ignore your little icon. It works as follows: when an Explorer 5 user bookmarks your page, Explorer searches for a special icon with the name "favicon.ico". If it finds one, it replaces the default Microsoft icon with the special little icon next to your name in the favorites menu and in the location bar. This supports dissemination because it increases visibility, which may entice people return to the site from the Explorer's Favorites menu (Altom, 2003).

Placement of a counter (a Web site tracking and analysis service). This counter will offer complete insight into traffic on the Web site. It shows, e.g., how many visitors there are, which pages are looked at most, and in which country these visitors reside (Nedstat, 2003). This information enables you to fine-tune the Web site to accommodate the visitors. Do many Belgians visit the Web site? Then ensure that these MERIS quick-looks for Belgium available, so that these visitors come back again sometime. It also shows how the visitors found the site, which enables to establish whether you need to change these search strings.





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- Van der Woerd, H.J., Eleveld, M.A. & Peters, S.W.M.(2002). *User requirements for REVAMP chlorophyll products: Phase 1 – Initial requirements inventory*. IVM report, E-02/10. (Available from: VU-IVM, De Boelelaan 1087, 1081 HV Amsterdam, the Netherlands).



## Appendix I. Questionnaire

### REVAMP User Requirements

REVAMP is an EC-project aiming at REgional validation of MERIS chlorophyll Products in North Sea coastal waters. Users can have an important say on the products that REVAMP will deliver. We kindly ask for your opinion on REVAMP. The results from this questionnaire will be used within the REVAMP project; your identity will not be revealed in any external publications.

The "Reset" button below will empty all fields. The "Send" button sends the form to the User Requirements responsible.

---

#### 1. Please provide your contact data

Name	<input type="text"/>
Organisation	<input type="text"/>
Address	<input type="text"/>
P.O. Box	<input type="text"/>
Postal code City	<input type="text"/>
Country	<input type="text"/>
Tel.	<input type="text"/>
Fax.	<input type="text"/>
E-mail	<input type="text"/>

#### 2. Please supply us with some information about your work and your computer

Function	<input type="checkbox"/> Researcher
	<input type="checkbox"/> Coastal manager
	<input type="checkbox"/> Policy advisor
	<input type="checkbox"/> Decision maker
	<input type="checkbox"/> Public

Scale on which you  
work (spatial)

Scale on which you  
work (temporal)

Daily work

Hardware

Operating system

Software

Browser

3. Please supply us with some information about your organisation

On which level does your institute focus?

☐

Local

☐

National

☐

Regional

☐

European

4. Please have a look at the [Users](#) slides (click)

Does Slide 3 (Matching) apply in your case?

Other remarks

5. Please supply us with some information about your method for determining CHL concentration.

Method

☐

HPLC

☐

Spectrophotometric

☐

Spectrofluorimetric

☐ Other

Other remarks

6. What's your reaction on the [Specification](#) slides (click). Do you agree with the listed specifications? Which additional specifications would you like to request?

It is very likely that REVAMP cannot give CHL products in the range from 0.1-30 micro-gram/liter with an accuracy of 10%. REVAMP does however give an accurate overview of the distribution of CHL. Which concentration and accuracy values would be acceptable for you?

L2&amp;3 CHL products

Other remarks

The logo on the maps will be the REVAMP logo. Which other specifications would you like to see changed.

L4 CHL products (1)

L4 CHL products (2)

Example of a L4 product

Other remarks

7. What's your reaction on the [Checklist](#) slides (click). Would you agree with all listed requirements?

L2&amp;3 CHL products

L4 CHL products

Dissemination requirements

Other remarks

8. Other remarks (e.g., individual objectives for considering using REVAMP products)

---

<u>S</u> end	<u>R</u> eset
--------------	---------------

When electronic submission does not work, please print this page, and send it filled out to

Hans van der Woerd

VU-IVM

De Boelelaan 1087

NL 1081 HV Amsterdam

The Netherlands

Fax +31 (0)20 444 9553

E-mail: [revamp.webmaster@ivm.vu.nl](mailto:revamp.webmaster@ivm.vu.nl)

12/08/2001

## Appendix II. User slides

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### Users

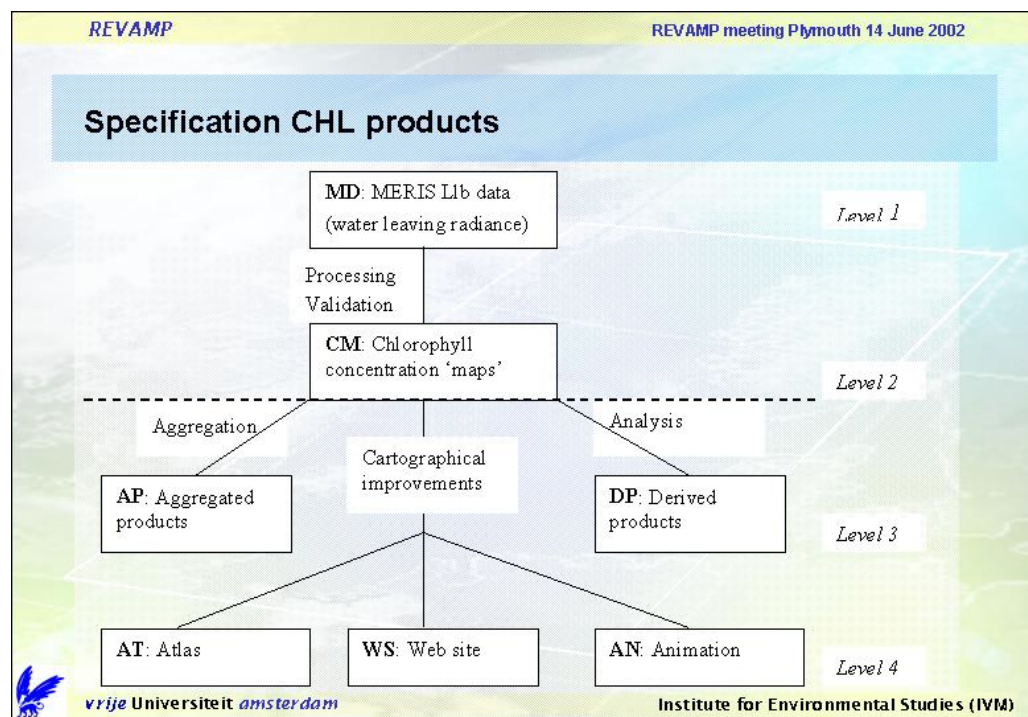
**Organisations ordered by focus**

Category	Institute
Local	
National	RIKZ
Regional	OSPAR
European	EEA

**Individuals grouped per function**

Category	Respondent
Researcher	
Coastal manager	
Policy advisor	RIKZ1, OSPAR1?
Decision maker	
Public	

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REVAMP

REVAMP meeting Plymouth 14 June 2002

**Matching – User requirements v CHL product**

<b>Chlorophyll product</b>	<b>Researcher</b>	<b>Coastal manager</b>	<b>Policy advisor</b>	<b>Decision maker</b>	<b>Public</b>
L1	X				
L2	X	X			
L3	X	X	X	X	X
L4	X	X	X	X	X



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## Appendix III. Specification slides


REVAMP

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Specification L2&3 CHL products

Parameter	Unit	Range of Interest	Accuracy	MERIS Potential	Remarks
CHL	( $\mu\text{g l}^{-1}$ )	0.1-30	(10%)	Yes	eutrophication area , optimum measurement strategy
TSM	( $\text{mg l}^{-1}$ )	1-1000	(10%)	Yes	sediment budget, pollutants
SD	(m)	+		Probably	General interest
FTU		-			
$K_{\text{PAR}}$	( $\text{m}^{-1}$ )	+			General interest
other Pigments		+		No	General interest related to algal blooms
CDOM	( $\text{mg l}^{-1}$ )	0.1-10	(0.2)		
macrophytes		+		No	General interest

Resolution Aspects	unit				
MERIS global	(1200 m)	There is a preference for higher resolution, but for most applications, with exception of dredging lanes, this is OK.			
MERIS full resolution	(300 m)	High demand for this type of resolution			
future resolution	(< 300 m)	Preference to go for typically 100 m resolution			
number of scenes required	( $\text{yr}^{-1}$ )	20 to 50		Probably	important to catch April maximum
current non-RS sampling frequency	( $\text{yr}^{-1}$ )	5 to 20		Yes	year to year changes due to cloud statistics

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REVAMP

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## Specification L4 CHL products

<i>Nr</i>	<i>Subject</i>	<i>Description</i>
1	<i>Images</i>	
1.1	Sensor	SeaWiFS (NASA)
1.2	Images	List of images to be included in the atlas
1.3	Coverage	Process and store data of the entire North sea, select an area for the maps
1.4	Projection	WGS 84
1.5	Geo-reference	UTM 31
1.6	Geo-correction	1 km
1.7	Spatial resolution	1 km
2	<i>TSM information</i>	
2.1	TSM data format	Integers
2.2	Precision	1 $\text{gm}^{-3}$
2.3	Accuracy	Accuracy in percentages or $\text{gm}^{-3}$ (in meta-information file)
2.4	Range	0-35 $\text{gm}^{-3}$
2.5	Legend	8 colours, linear scale
2.6	Clouds	White
2.7	Land	1 land mask or topographical map?
2.8	Other waters	Non-North Sea water light blue (of grey)
3	<i>Meta-information</i>	
3.1	Date	dd mmm j j j (Julian day)
3.2	Time	UTC
3.3	Wind	In $\text{m s}^{-1}$ and in directions (e.g., N, NE) based on meteorological data
3.4	Tide	Relative to Dutch Ordnance Level (NAP), Time from 8:00-18:00 UTC, Astronomical tide of Flushing (Vlissingen) and Den Helder
3.5	Sensor	Name SeaWiFS (NASA)
3.6	File	Filename Arc_Info file


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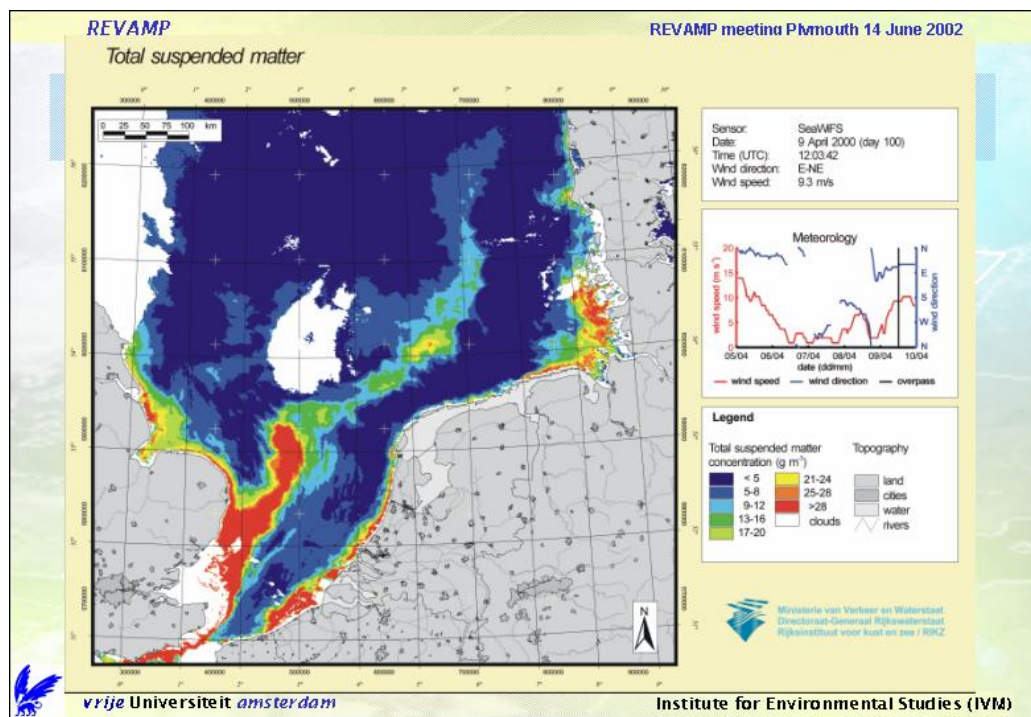
REVAMP REVAMP meeting Plymouth 14 June 2002

## Specification L4 CHL products

Nr	Subject	Description
4	Map layout	
4.1	Format paper	A4 landscape
4.2	Margins	Left 2 cm, other 1 cm
4.3	Area	Southern North Sea (Dutch Territorial Waters): LL: 51 NB 0 EL, UR 56 NB 9 EL
4.4	Title	Concentration total suspended matter
4.5	Grid	UTM (yellow crosses)
4.6	MWTL measurement points	Points on overview map
4.7	Logo	Logo Rijkswaterstaat with RIKZ
5	Delivery	
5.1	Format	Arc_Info project, TIFF file
5.2	Storage	CDROM
5.3	Name	Unambiguous
5.4	Metadata file	

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## Appendix IV. Checklist slides

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### Matching – Checklist

**Level 2 and Level 3 products: Chlorophyll concentration 'maps', Aggregated and Derived products**

1. The CHL algorithms **MUST** produce reliable CHL concentration values in the range of 0.1 – 30  $\mu\text{m}$
2. The accuracy of the CHL products **MUST** be at least 10%
3. The product **MUST** be accompanied by metadata
4. A quality indicator **MUST** be delivered with the product
5. MERIS full resolution imagery **SHOULD** be used
6. All scenes covering the North Sea **SHOULD** be processed, and the April maximum **MUST** be caught


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### Matching - Checklist

**Level 4 products: Atlas, Web site, and Animation**

1. The entire North Sea **SHOULD** be covered
2. The projection **MUST** be in WGS 84
3. The CHL product **SHOULD** be projected on a grid with a spatial resolution of 300 m (full resolution)
4. The legend **MUST** consist of 8 colours
5. Clouds **MUST** be indicated in white, a land mask or topographical map **MUST** cover land, other waters **MUST** be indicated in blue (or grey)
6. Metadata **MUST** be given, and meta-information **SHOULD** be added to the product, information on temperature and PAR **MAY** be added to the product
7. Date **MUST** be in dd mmmm jjjj (Julian day)
8. Time **MUST** be in UTC
9. The maps **MUST** fit on A4 paper, and **MUST** have a standard layout
10. The title **SHOULD** be Chlorophyll concentration
11. The REVAMP logo **MUST** be on the maps
12. The delivery formats **MUST** consist of a TIFF and in ArcInfo / ArcView 3.2 (ESRI) project format

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**REVAMP**

REVAMP meeting Plymouth 14 June 2002

## Dissemination requirements

**Checklist**

1. Final REVAMP products **MUST** be accessible via the Internet
2. The Welcome pages of REVAMP **SHOULD** be readable on any browser and **MUST** comply with the HTML 4.01 standard as published by the W3 Consortium
3. The REVAMP web server **MUST** allow concurrent operations of different users
4. The use of the REVAMP web site **MUST** be user-friendly and require no specific knowledge of informatics
5. The use **SHOULD** be intuitive and **MUST NOT** require any preparatory training
6. The REVAMP web site **SHOULD NOT** require user hardware faster than 150 MHz Pentium, with 64 MB memory, and a browser with Java 1.2 plug-in installed
7. The REVAMP web site **SHOULD NOT** require Internet connection speed over 56 Kb
8. The REVAMP web site **MUST** work with Netscape 4.7 and Internet Explorer 5 under Windows NT, 98 and 2000 and **SHOULD** work with newer versions of these browsers and operating systems
9. Java applets and Browser plug-ins **MAY** be used but **SHOULD NOT** require assistance of a system administrator, or user side configuration changes
10. Animations **MAY** be used to give insight in temporal changes
11. REVAMP products **SHOULD** facilitate international comparison of data and information

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## Appendix V. Source code

```

<html>

<head>
<meta http-equiv="Content-Type"
content="text/html; charset=iso-8859-1">
<LINK HREF="http://www.vu.nl/ivm/css/ivm.css" REL="stylesheet" TYPE="text/css">
<meta http-equiv="Content-Type"
content="text/html; charset=iso-8859-1">
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
<title>REVAMP User Requirements, Questionnaire</title>
<base target="_top">
<!-- -->
<!-- This HTML file and its graphics -->
<!-- are (c) 1997 Vrije Universiteit Amsterdam -->
<!-- -->
<!-- The program that generated these pages is -->
<!-- (c) 1996-1997 <GX> group -->
<!-- -->
<!-- Comm ME: Perl server varies, alternative: -->
<!-- http://www.vu.nl/cgi-bin/formulier.pl -->
<!-- http://www.vu.nl/cgi-bin/formmail.pl -->
<!-- -->
</head>

<body
text="#000000">

<h2><font face="Arial">REVAMP User Requirements</font></h2>
<p><font face="Arial">REVAMP is an EC-project aiming at REgional validation of
MERIS chlorophyll Products in North Sea coastal waters. Users can have an
important say on the products that REVAMP will deliver. We kindly ask for your
opinion on REVAMP. The results from this questionnaire will be used within the
REVAMP project; your identity will not be revealed in any external publica-
tions.</font></p>

<p><font face="Arial">The &quot;Reset&quot; button below will empty all fields.
The &quot;Send&quot; button sends the form to the User Requirements responsi-
ble.</font></p>

<hr>

<form action="http://130.37.129.100/cgi-bin/formulier.pl" method="POST">
  <input type="hidden" name="recipient"
value="hans.van.der.woerd@ivm.vu.nl"><input type="hidden"
name="subject" value="REVAMP User Requirements, Questionnaire"><input
type="hidden" name="redirect"
value="http://ivm5.ivm.vu.nl/QRvThanks.htm"><input
type="hidden" name="required"

value="name,organisation,address,pobox,city,country,tel,fax,email,function_type,scalesp,
scalet,
daily-
work,hardware,operatingsys,software,browser,scale_inst,matchingusers,remarksusers,
method_chl,remarkschl,I23chl,remarksI23chl,I4chl1,I4chl2,example,remarksspeci,checkI2
3chl,
checkI4chl,checkdiss,remarkscheck,genremarks"><input type="hidden"
name="sort"

```



```
value="order: name,organisation,address,pobox,city,country,tel,fax,email,function_type,scalesp,scalet,daily-work,hardware,operatingsys,software,browser,scale_inst,matchingusers,remarksusers,method_chl,remarkschl,l23chl,remarksl23chl,l4chl1,l4chl2,example,remarksspeci,checkl23chl,checkl4chl,checkdiss,remarkscheck,genremarks"><input type="hidden" name="env_report"
```

```
value="REMOTE_HOST,REMOTE_ADDR,REMOTE_USER,REMOTE_IDENT,HTTP_USER_AGENT">
```

```
<h3><font face="Arial">Questionnaire</font></h3>
```

```
<h4><font face="Arial">1. Please provide your contact data</font></h4>
```

```
<table border="0" width="506">
  <tr>
    <td align="right" width="130">
      <p align="left"><font face="Arial">Name</font></p>
    </td>
    <td valign="top" width="360"><font face="Arial"><input type="text" size="50" name="name" tabindex="1"></font></td>
  </tr>
  <tr>
    <td align="right" width="130">
      <p align="left"><font face="Arial">Organisation</font></p>
    </td>
    <td valign="top" width="360"><input type="text" size="50" name="organisation" tabindex="2"></font></td>
  </tr>
  <tr>
    <td align="right" width="130">
      <p align="left"><font face="Arial">Address</font></p>
    </td>
    <td valign="top" width="360"><font face="Arial"><input type="text" size="50" name="address" tabindex="3"></font></td>
  </tr>
  <tr>
    <td align="right" width="130">
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    <td valign="top" width="360"><font face="Arial"><input type="text" size="50" name="pobox" tabindex="4"></font></td>
  </tr>
  <tr>
    <td align="right" width="130">
      <p align="left"><font face="Arial">Postal code City</font></p>
    </td>
    <td valign="top" width="360"><font face="Arial"><input type="text" size="50" name="city" tabindex="5"></font></td>
  </tr>
  <tr>
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    </td>
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  </tr>
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        <td valign="top" width="360"><font face="Arial"><input type="text" size="50"
            name="tel" tabindex="7"></font></td>
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    </tr>
    <tr>
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        </td>
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            name="email" tabindex="9"></font></td>
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<h4>&nbsp;</h4>
<h4><font face="Arial">2. Please supply us with some information about your
work and your computer</font></h4>

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    <tr>
        <td width="84">&nbsp;<font face="Arial">Function</font></td>
        <td width="324"><input type="checkbox"
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face="Arial">Researcher</font></td>
    </tr>
    <tr>
        <td width="44">&nbsp;</td>
        <td width="324"><input type="checkbox"
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face="Arial">Coastal
manager</font></td>
    </tr>
    <tr>
        <td width="44">&nbsp;</td>
        <td width="324"><input type="checkbox"
            name="function_type" value="function 3" tabindex="12"><font
face="Arial">Policy
advisor</font></td>
    </tr>
    <tr>
        <td width="44">&nbsp;</td>
        <td width="324"><input type="checkbox"
            name="function_type" value="function 4" tabindex="13"><font
face="Arial">Decision
maker</font></td>
    </tr>
    <tr>
        <td width="44">&nbsp;</td>
        <td width="324"><input type="checkbox"
            name="function_type" value="function 5" tabindex="14"><font
face="Arial">Public</font></td>
    </tr>
</table>

```



```

<h4>&nbsp;</h4>

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work&nbsp;  (spatial)</font></p>
    </td>
    <td valign="top" width="425"><font face="Arial"><input type="text" size="60"
name="scalesp" tabindex="15"></font></td>
  </tr>
  <tr>
    <td align="right" width="195">
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work&nbsp;  (temporal)</font></p>
    </td>
    <td valign="top" width="425"><font face="Arial"><input type="text" size="60"
name="scalet" tabindex="16"></font></td>
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  <tr>
    <td align="right" width="195">
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  </tr>
  <tr>
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name="hardware" tabindex="18"></font></td>
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    </td>
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name="operatingsys" tabindex="19"></font></td>
  </tr>
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name="software" tabindex="20"></font></td>
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    <td align="right" width="195">
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    </td>
    <td valign="top" width="425"><font face="Arial"><input type="text" size="60"
name="browser" tabindex="21"></font></td>
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</table>

<h4>&nbsp;</h4>

<h4><font face="Arial">3. Please supply us with some information about your

```

```

organisation</font></h4>

<table border="0" width="620">
  <tr>
    <td width="154"><font face="Arial">On which level does your institute fo-
cus?</font></td>
    <td width="144"><input type="checkbox"
      name="scale_inst" value="scale 1" tabindex="22"><font
face="Arial">Local</font></td>
  </tr>
  <tr>
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face="Arial">National</font></td>
  </tr>
  <tr>
    <td width="154">&nbsp;</td>
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face="Arial">Regional</font></td>
  </tr>
  <tr>
    <td width="154">&nbsp;</td>
    <td width="144"><input type="checkbox"
      name="scale_inst" value="scale 4" tabindex="25"><font
face="Arial">European</font></td>
  </tr>
</table>

<h4>&nbsp;</h4>

<h4><font face="Arial">4. Please have a look at the <a
href="http://ivm5.ivm.vu.nl/Users.htm">Users</a>
slides (click)</font></h4>

<p><font face="Arial">Does Slide 3 (Matching) apply in your case?</font></p>
<p><font face="Arial"><input type="text" size="86" name="matchingusers"
tabindex="26"></font></p>

<p><font face="Arial">Other remarks</font></p>
<h4><font face="Arial"><input type="text" size="86" name="remarksusers"
tabindex="27"></font></h4>

<p>&nbsp;</p>

<h4><font face="Arial">5. Please supply us with some information about your
method for determining CHL concentration.</font></h4>

<table border="0" width="620">
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      name="method_chl" value="method 1" tabindex="28"><font
face="Arial">HPLC</font></td>
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  <tr>
    <td width="154">&nbsp;</td>
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face="Arial">Spectrophotometric</font></td>
  </tr>

```



```
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ucts&nbsp; (2)</font></p>  
  </td>  
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name="l4chl2" tabindex="36"></font></td>  
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product</font></p>  
  </td>  
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name="example" tabindex="37"></font></td>  
</tr>  
</table>  
  
<p><font face="Arial">Other remarks</font></p>  
  
<p> <font face="Arial"> <input type="text" size="86" name="remarksspeci"  
tabindex="38"></font></p>  
  
<h4>&nbsp;</h4>  
  
<h4><font face="Arial">7. What's your reaction on the <a  
href="http://ivm5.ivm.vu.nl/Check.htm">Checklist  
</a>slides (click). Would you agree with all&nbsp; listed requirements?</font></h4>  
<table  
border="0" width="620">  
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    <td align="right" width="195">  
      <p align="left"><font face="Arial">L2& 3 CHL products</font></p>  
    </td>  
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name="checkl23chl" tabindex="39"></font></td>  
  </tr>  
  <tr>  
    <td align="right" width="195">  
      <p align="left"><font face="Arial">L4 CHL products</font></p>  
    </td>  
    <td valign="top" width="425"><font face="Arial"><input type="text" size="60"  
name="checkl4chl" tabindex="40"></font></td>  
  </tr>  
  <tr>  
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type="reset" value="Reset"> </font> </p>
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<p>Fax +31 (0)20 444 9553<br>
E-mail: <a
href="mailto:hans.van.der.woerd@ivm.vu.nl">hans.van.der.woerd@ivm.vu.nl</a> <br>
</p>
12/08/2001

</form>

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